IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Jacek Szyszko   Art Unit   : 2134
Serial No. : 09/734,834   Examiner : Ellen C. Tran
Filed   : December 11, 2000   Assignee : Intel Corporation
Title   : KEYED AUTHENTICATION ROLLOVER FOR ROUTERS

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<u>PRE-APPEAL BRIEF REQUEST FOR REVIEW</u>

Applicants submit this request under the New Pre-Appeal Conference Pilot Program described in the U.S. Patent and Trademark OG Notice, "New Pre-Appeal Brief Conference Pilot Program," dated 12 July 2005 and extended until further notice as of January 10, 2006. This request is being filed with a Notice of Appeal. Applicants request review of the matters discussed below by a panel of examiners, because the patentable subject matter rejections under 35 U.S.C. § 103(a) are clearly without basis.

Claims 1-30 are pending in the application. Of these, claims 1, 9, 14, 20, 25, 27 and 29 are independent. Claims 1-30 were rejected under 35 U.S.C. §103(a) as unpatentable over Li (U.S. Patent No. 6,606,706) in view of the Open Shortest Path First (OSPF) roving protocol version 2 (the "OSPF reference"). Applicants have addressed those rejections in a reply (dated September 12, 2006) to a final Office action, but the rejections were maintained as final in an Advisory action (dated September 27, 2006).

Accordingly, applicants ask that the panel review the Section 103(a) issue below, which Applicants submit will dispose of the entire appeal. Applicants reserve the right to expand these issues and/or present new issues should they subsequently file an appeal brief.

For the sake of brevity, this brief will focus on the method claims 1-8 (of which claim 1 is the only independent claim), although it should be understood that the positions applicants take in connection with the method claims apply with at least equal force to the other pending claims 6-30, and hence applicants request that these claims be considered by the panel as well.

Claim 1 of the present application recites:

1. A method of transmitting routing information comprising:

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Assignee: Intel Corporation

sending a first message containing a first sequence identifier and a digest of routing information that has been calculated using a first authentication key; and

subsequently sending a second message containing a second sequence identifier that is earlier in a sequence than the first sequence identifier and a digest of the routing information that has been calculated using a second authentication key;

wherein the second sequence identifier is sequentially related to the first sequence identifier.

An example of the method recited in claim 1 is disclosed in the present application on pages 10-13 and in FIG. 5. As disclosed in that example, a router 12A broadcasts two routing messages to routers 12B and 12C -- a first routing message (which includes a digest calculated with a current key, "KEY 2") identified by a sequence number SEQ+2 and a second routing message (which includes a digest calculated with an old key, "KEY 1") identified by sequence number SEQ+1. Since an authentication key rollover was not completed in router 12C, the router 12C expects KEY 1. Accordingly, when router 12C receives the first message (which includes KEY 2), router 12C does not process that message because it uses an unexpected key. Subsequently, when router 12C receives the second message (KEY 1, SEQ+1), router 12C processes that message because: 1) the sequence number (N+1) is greater than the sequence number (N) of a previously processed message; and 2) the second message uses the expected key (KEY 1).

On the other hand, since the key rollover was successfully implemented in router 12B, router 12B expects KEY 2. Accordingly, when the first message (including KEY 2) reaches the router 12B, router 12B processes that message because the first message uses the expected key (KEY 2) and because the sequence number of the message (N + 2) is greater than the sequence number (N) of the previously processed message. When the second message reaches the router 12B, router 12B does not process that message because the sequence number of the second message (N + 1) is less than the sequence number of the most recently received routing message (*i.e.*, N + 2 from the first message).

Accordingly, in certain implementations, the method recited in claim 1 can help ensure that every router (*e.g.*, 12B, 12C) in a network efficiently processes messages, despite authentication key rollovers occurring in certain (but not necessarily all) routers in the system.

In both the final Office action and Advisory action, however, the Examiner alleges for various reasons (pgs. 2-4, Final Office action; pg. 2, par. 2, Advisory action) that although the Li patent does not disclose the claimed first and second "sequence identifier[s]," it would have been obvious to one of ordinary skill in the art to combine the Li patent with the sequence numbers of the OSPF reference in order to obtain the subject matter of present claim 1. Applicant respectfully disagrees and asserts that it would not have been obvious to combine the cited references and, furthermore, combining the features of the cited art would not have resulted in the subject matter of present claim 1. The Examiner's arguments are addressed below.

1) The Examiner alleges that since the OSPF reference discloses sequence numbers used to detect old and duplicate link state advertisements (LSA), it would have been obvious to one of ordinary skill in the art to "utilize sequence numbers when transmitting messages" in the Li patent (*see* pg. 4, Final Office action). That is incorrect. Even if the Li patent were modified as the Office action suggests (*i.e.*, to include sequence numbers when transmitting messages), the subject matter of claim 1 would not result. Claim 1 recites a particular method that involves sending a second message containing a second sequence identifier that is <u>earlier</u> in a sequence than a first sequence identifier of a first message. There is no suggestion or disclosure, however, in the OSPF reference of sending a first message and *subsequently* sending a second message that has a sequence number <u>earlier</u> than the sequence number of the first message. Instead, the OSPF reference merely discloses that the LSA's sequence number is "incremented each time a router originates a new instance of the LSA" (*see* Sec. 12.1.6, pg. 120). It is difficult to perceive how the foregoing feature of the OSPF reference corresponds to sending a second message with a sequence number <u>earlier</u> than a sequence number of a first message. Indeed, if the sequence number is incremented each time the router of the OSPF reference originates a new instance of the LSA, then the OSPF reference appears to teach the *opposite* of what is recited in present claim 1, *i.e.*, sending a second message with a sequence number <u>later</u> than a sequence number of a first message.

2) The Examiner further alleges (pg. 2, Advisory action) that the message lifetime of the Li patent is an "obvious variation" of sequence numbers and, therefore, it would have been obvious to combine the sequence numbers of the OSPF reference with the messages of the Li patent. However, applicant notes that the function and intended use of message lifetimes, as disclosed in the Li patent, are entirely different and separate from the function and intended use of sequence numbers in the OSPF reference and, therefore, it would not have made sense to incorporate the sequence numbers of the OSPF reference. Furthermore, the security system disclosed in the Li patent would fail to operate correctly if the sequence numbers were incorporated in place of message lifetimes. In particular, message lifetimes of the Li patent indicate whether or not the originator of a Group Request message intends to join or leave a multicast session (col. 10, lines 45-48). On the other hand, the sequence numbers of the OSPF reference indicate the most recent link state advertisement where a link state advertisement is a unit of data "describing the local state of a router or network" (*see* Sec. 1.2, pg 10). Clearly, the purpose and function of a message lifetime and a sequence number are different and, therefore, the message lifetimes are not an "obvious" variation of the sequence numbers disclosed in the OSPF reference. Furthermore, even if the sequence numbers were included in place of the message lifetimes in the Li patent, the security system would fail to operate correctly because it would no longer be able to correctly identify when the originator of a Group Request message intends to join or leave a multicast session.

3) Additionally, the Examiner alleges (pg. 2, Advisory action) that the sequence identifier claimed by the applicant has the "same function as the lifetime of the key used in the messages of the Li patent." This is incorrect. As discussed above, the sequence identifiers of the present application identify first and second messages with different authentication keys and are used to allow routers to efficiently process messages, whereas the message lifetimes of the Li patent indicate whether or not an originator of a Group Request message intends to join or leave a multicast session. Clearly, the functions of the two features are entirely different. Furthermore, as is known by those of ordinary skill in the art, message lifetimes correspond to the length of time a message exists or is considered valid. The sequence identifiers of the present application, however, do not relate to the length of time a message is considered valid. Therefore, the

sequence identifiers claimed in the present application do not have the same function as the

lifetimes of the keys disclosed in the Li patent.

At least for the foregoing reasons, independent claim 1 should be allowed.

Claims 2-8 depend from claim 1 and, therefore, should be allowable for at least the same
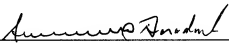
reasons as claim 1.

Independent claims 9, 14, 20, 25, 27 and 29 also recite sending a second message

containing a second sequence identifier that is _earlier_ in a sequence than a first sequence

identifier of a first message. Accordingly, those claims should be allowable for at least the same

reasons discussed above with reference to claim 1.

Claims 10-13, 15-19, 21-24, 26, 28 and 30 respectively depend from allowable claims

and, therefore, should be allowable for at least the same reasons as the claims from which they

depend.

It is believed that all of the pending claims have been addressed. However, the absence

of a reply to a specific rejection, issue or comment does not signify agreement with or

concession of that rejection, issue or comment. In addition, because the arguments made above

may not be exhaustive, there may be reasons for patentability of any or all pending claims (or

other claims) that have not been expressed. Finally, nothing in this paper should be construed as

an intent to concede any issue with regard to any claim, except as specifically stated in this

paper.

Respectfully submitted,

Date:_____ 1/1/06 _____   _____
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